ICT Update
a current awareness bulletin for ACP agriculture

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A Zambian tech hub encourages web and mobile app development

A cell phone app tracks each cow on its periods in gestation, feeding, and milking

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Editor: Evert-jan Quak
Editorial coordination (CTA): Chris Addison, Ken Lohento, Giacomo Rambaldi
Research: Cédric Jeanneret-Grosjean
Language editing: Mark Speer (English), Jacques Bodichon (French)
Layout: Anita Toebosch
Translation: Patrice Deladrier
Cover photo: @whiteafrican/Erik Hersman/iHub

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Guest Editor

ICT, development and entrepreneurship

Development is taking on a new meaning in ACP nations. The combination of affordable cell phones, broadband internet and high levels of demand for devices is boosting the computer software and hardware industries in many countries. There are now more than 35 technology hubs throughout sub-Saharan Africa, training and inspiring a new generation of entrepreneurs. They produce web platforms, cell phone applications and games. They use the internet to 'crowdfund' their projects, and think up new ways to bring information and services to the wider population. Their efforts attract international investment, and lead to improvements in value chain efficiency and agricultural production. To these new innovators, development is no longer solely about combating poverty and poor infrastructure. Rather, it is about a world of new opportunities.

Internet penetration is developing remarkably fast on the African continent. As the infrastructure improves and technologies continue to spread there, more people will use them to develop solutions for local problems. The West is no longer the sole source of technological breakthroughs. Africans seem to be enjoying new technologies and are using them in their everyday businesses.

Lack of business skills

Personally I think ICT tech start-up companies will flourish only in favourable environments. By favourable I mean environments where companies can be nurtured, funded, mentored and given a chance to implement their ideas. However, most developers find it hard to make their ideas marketable.

Claude K. Migisha (mikaclau@gmail.com) is a co-founder of The iHills Network (www.theihills.com/), kLab (www.klab.rw/) and Noble Click Ltd (www.nobleclicks.com/). He works as an IT officer at Jhpiego's office in Rwanda and was 2011 ITU Global Digital Innovator.

Generally there is a huge gap between competent technical developers and good sellers or business people. For example, in my country, Rwanda, there is an initiative called The iHills Network. It is an association of Rwandan tech start-up companies that aims to inspire tech entrepreneurship among young Rwandans, to develop their business and interpersonal skills, and thus facilitate the creation of jobs in Rwanda's technology sector. ICT entrepreneurs generally have technical skills but lack the business skills needed to achieve success.

iHills' aim is to help young ICT entrepreneurs to commercialize their products or find people willing to invest in their ideas. In its first 10 months, iHills became a network of 15 small tech companies looking for ways to market their ideas. Its focus is not restricted to e-commerce in urban areas. Rwanda, like most parts of Africa, is an agricultural economy, with 80% of its population living in rural areas. So it is crucial to focus on creative and innovative ICT solutions for common problems in local rural areas. The network of young ICT tech entrepreneurs in Kigali now organises monthly meetings with rural communities and speaks with them about the problems they face. Then, together, they try to find creative solutions and develop new technologies.

African innovators usually turn to software when looking for innovate solutions, but it is equally important that they consider practical hardware solutions as well. However, there are two major challenges holding back the further expansion of hardware development: cost and electricity. A lot still need to be done in terms of expanding the electricity network on the continent. High-quality hardware is still expensive for local small and medium enterprises, and using cheap hardware is neither sustainable nor cost effective as it costs too much to maintain and does not last long.

ICT is a tool for development, but will only flourish if small tech start-up companies grow and generate new jobs. Technology is not the only issue. My message is: don't fear the market. ◄

Will Mutua (wmworia@gmail.com) is a software, mobile and web consultant, founder of Afrinnovator and African Pixel.

Africa´s innovative engines

ICT innovation

Today, 'Africa', 'technology' and 'innovation' are terms often found in the same sentence. Technology, and particularly mobile telephony, has radically changed the face of the continent and the lives of its people.

Africa is the fastest-growing mobile market in the world and is the second largest, after Asia. According to the GSM Association, mobile subscriptions have grown almost 20% each year for the past five years. The GSMA, according to its November 2011 Africa Mobile Observatory report, predicts that there will be over 700 million subscribers by the end of 2012. There were already close to 650 million subscribers in the fourth quarter of 2011, about 65% of the total potential market.

Mobile has also been a key asset to increasing the penetration of the internet in Africa. In Kenya, for example, the mobile phone is the primary means by which people access the internet. According to the latest statistics from the Communications Commission of Kenya, out of a total of 6.15 million internet subscriptions, mobile data and internet subscriptions account for 6.07 million of those.

Access to the internet and mobile technologies has spurred innovation across the continent in various sectors such as finance, health and agriculture.

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Mobile innovation

Access to the internet and mobile technologies has spurred innovation across the continent in various sectors such as finance, health and agriculture. Mobile money, and specifically the success story of M–Pesa (M=mobile, and Pesa is Swahili for money), is the poster child of mobile innovation in the African financial services sector. Ubiquitous mobile technology such as SMS has led to the financial inclusion of millions of Africans who would otherwise be termed as 'unbanked'.

Two examples of innovative services stand out in the agricultural sector. Esoko is a fast-growing software company headquartered in Accra, Ghana. It focuses on improving agricultural processes through creating software for collecting, analysing and sharing data related to agriculture. A company in Kenya founded by three women, M–Farm, is using SMS technology to enable farmers to get current price information, aggregate their needs and connect them with farm input suppliers, enabling them to sell their produce collectively.

Many mHealth initiatives are being undertaken across the African continent. For example, students at Uganda's Makerere University came up with a mobile app for taking pregnancy scans. The app, called WinSenga, records the sounds from the mother's belly and contains an analysis program that produces reports detailing the unborn baby's position, age, weight, breathing pattern and heart rate.

Innovation hubs

The numerous innovation hubs that have sprung up across the continent are nerve centres of innovation. These spaces pioneered by Nairobi's Innovation Hub (iHub) are pooling together talented, innovative young people and creating a supportive environment for innovation. There are at least 35 tech hubs now in 13 countries across Africa.

These innovation hubs are instrumental at strengthening 'bottom of the pyramid' companies – often scrappy start-ups that are in the pre-seed funding stage, with just a couple of people with an idea probably trying to come up with a prototype. The hub provides a place for these start-ups to work from so they do not have to worry about basics such as office space or internet connectivity and costs while at the same time exposes them to like-minded individuals.

Hubs also create environments that support the exchange of ideas as developers meet and mingle with designers and business people. Amazing innovations result from interacting in these environments.

Africa online

The future is bright. Today, Africa is connected to the world via numerous undersea cables. As a result, wholesale prices for internet bandwidth have dropped by as much as 90% from previous levels based on satellite access, and the cost savings are slowly trickling down to the retail level.

Delivering broadband to the 'last mile' connection is still a challenge, but fortunately, the mobile phone network has been a significant factor in bringing access to even the remotest of users. The introduction of what could be termed low-end, low-cost smart phones stands to further increase internet penetration on the continent. In Kenya, Huawei, a Chinese telecommunications company, introduced its low-cost Android-powered IDEOS smartphone in partnership with Safaricom in 2011. The phone rapidly became the country's top selling smartphone.

Growing internet penetration has levelled the playing field and increased access to knowledge. Africa has joined the knowledge economy, and there are far fewer barriers to competing on this platform, as opposed to other sectors of the economy. Africa is a continent to watch. Its innovative engines are running nicely, and it is becoming harder to ignore as a player in the world economy. ◄

Innovation hubs are instrumental at strengthening 'bottom of the pyramid' companies – often scrappy start-ups that are in the pre-seed funding stage

Cooperation for development

The spirit of sharing is at the heart of the many new technology hubs that have opened in ACP countries in recent years. In Zambia, BongoHive encourages industry professionals to work with enthusiastic beginners to develop applications for the local mobile market.

In December 2010, *ICT Update* reported on the official launch of two new regional technology hubs dedicated to training, supporting and inspiring new developers: iHub in Nairobi, covering East Africa, and mLab Southern Africa, based in Tshwane, South Africa. Since then, dozens of similar spaces providing guidance and facilities for enthusiastic innovators have flourished around the continent.

There had been similar groups of like-minded people meeting in cities of many ACP countries before, in computer societies, or working on open-source projects or developing internet service provider (ISP) facilities. Several of these initiatives even attracted donor funding, but few of them lasted more than a couple of years, and many did not invest the time or money in developing new talent.

Those involved in the new 'hubs', as they are widely known, are eager to avoid those mistakes. There is a far greater emphasis on sharing skills, equipment, space and time, and not just among the individual groups but between the various hubs around the continent. The ability to exchange ideas with people in other countries has, of course, been accelerated by the expansion of broadband internet across Africa, and the increased availability of ICT equipment. But the technology is only one part of a complex equation.

'The driving force behind the development of tech hubs in Africa has not come about because we are suddenly all reading about Facebook and other internet successes,' says Lukonga Lindunda co-founder of BongoHive, a technology hub based in the Zambian capital, Lusaka. 'Instead, there has been a major change in the younger generation's mindset. We no longer want to wait for donors to come with money, or superpowers to tell us what we have to do. We want to change the world we see around us, our local environment, and solve our own problems.'

In the spring of 2011, Lindunda co-founded BongoHive. 'When I finished my studies in South Africa,' he says, 'one of the challenges when I came back to Zambia was that there was nowhere I could get together with other people interested in technology. There was no place where we could meet to brainstorm ideas or share experiences, no open space with internet access or where we could work together.'

Lindunda found a job as an ICT advisor with the Belgian development organisation, Flemish Association for Development Co-Operation and Technical Assistance (VVOB) in Zambia, which focuses on educational programmes in the country. Together with his colleague Bart Cornille, Lindunda was looking for ways to develop sustainable, locally-driven solutions to some of the challenges they encountered in their work. They had heard about the hubs in Kenya and South Africa and realised that a similar initiative could be useful in Zambia.

'We managed to convince VVOB that it was a good idea too,' says Lindunda, 'and we negotiated the use of a room at the Ministry of Education, which we used to start BongoHive. Part of the deal was that some of the ideas that would be developed from the hub would be applied for use in VVOB's educational programmes.'

Hands-on

While the hub does not focus exclusively on developing applications for education, Lindunda is convinced that it is an area worthy of new developers' attention. 'From my experience, students do not learn the necessary practical skills in universities. That's the nature of most universities, but in Zambia it's even worse because the university here does not have access to a stable internet connection or enough computers even for the people who are studying computer science.'

The number of Zambians using the internet is rising, with many accessing slower connections on their cell phones. But these are early days and there is still a long way to go before people learn how to make the best use of it, and to develop applications to suit their specific needs.

The lack of facilities and advanced-level training in technology subjects presents a significant challenge for BongoHive and for other tech hubs in ACP countries. 'It's not enough to offer people a space or an opportunity for them to innovate,' says Lindunda, 'it is also about developing skills and getting people to think innovatively, and have the right tools to turn their ideas into actual, practical solutions.'

BongoHive, therefore, aims to support interested individuals regardless of their previous experience. The types of people using the facilities range from high school and university students to professionals already working in the ICT industry. The atmosphere is informal, brainstorming ideas is encouraged, and everyone shares their experience and learns from each other.

Guidance

When VVOB expanded one of its projects with 350 extra computers, Lindunda saw the opportunity to get in touch with other people interested in technology. Eight people responded, mostly graduates from the nearby Evelyn Hone College of Applied Arts and Commerce. Around the

Lukonga Lindunda (lukonga@bongohive.com) is ICT advisor with VVOB Zambia and co-founder of BongoHive (www.bongohive.com).

BONGOHIVE.COM

The increased availability of broadband internet has made it easier to develop applications for the web and for cell phones, and to communicate with other technology hubs around the world.

It is not enough to offer a space for them to innovate, it is also about developing skills and getting people to think innovatively

same time, Lindunda had the opportunity to visit iHub in Kenya and mLab in South Africa. When he returned to Lusaka and met with the eight graduates and some other friends with more computer experience, they decided to start the hub, initially as an informal get-together.

'The advice I got from Juliana Rotich and Erik Hersman of Ushahidi when I visited the other hubs was to just start, not to wait for funding or approval from donor agencies or government ministries. So we did,' says Lindunda, 'we just started. We were passionate about growing a community. For us, it was about the people, about sharing knowledge. We didn't try to plan where we would be in a year or two, we simply decided to start meeting consistently.'

One of their first tasks was to identify the skills that people in the team had, and to match them with the people who wanted to learn those skills. The group worked together to exchange expertise, and also organised training courses on a variety of topics. These courses covered the use of programming and web applications including Ruby on Rails, Java, C Sharp and FrontlineSMS. And, in December 2011, BongoHive hosted its first training course on the development of mobile applications.

'Twenty-five people attended the two-week-long apps development course,' says Lindunda. 'Most of them already had some experience in programming, and were at least familiar with working with Java. We could offer the course to them for free because we'd managed to secure sufficient funding.'

Technical training, however, was only part of the course. It was equally important, says Lindunda, that the participants learned the basic processes involved in solving problems. 'That thought process is essential, where you see a problem in the world around you and work through the necessary steps to find the best solution. That solution might not necessarily involve technology. As long as the outcome solves the problem, that's the most important thing, and I think that it was this concept that had a real, lasting effect on those who attended the course.'

BongoHive progressed rapidly in the first 12 months, attracting support and funding from established organisations and industry specialists. But that backing only came about through the hard work of those involved. The first six months were especially difficult, admits Lindunda, as they struggled in their attempts to raise the profile of the initiative and make people aware of the fact that BongoHive existed.

Competition

The space has a broadband internet connection, a few computers and desks where people with their laptops can work. 'It's very basic,' says Lindunda,

Related links

ICT Update article on mLab Southern Africa
➜ http://goo.gl/Q42LT

ICT Update article on iHub
➜ http://goo.gl/RdnWr

BongoHive's crowdsourced map of African tech hubs
➜ https://africahubs.crowdmap.com/

'but for us, the first priority was to get people together and to build a community. One year after we started, we are now in a position to show other local organisations and potential funders that we are serious, that we have a core group of motivated individuals.'

The group is talking with other likely funders to develop their facilities further. The next problem, says Lindunda, is to expand beyond the limitations of the current premises at the Ministry of Education, and to develop a sustainable business model for BongoHive.

Lindunda and Cornille work full-time for VVOB, and offer the services to the hub as volunteers. That arrangement works well at the moment while the numbers of people attending are still low, but when more people get involved the responsibilities will increase and require the attention of dedicated full-time staff. The plan is to attract more local funding and to develop partnerships with telecommunications companies and similar businesses in the country.

One potential source of income, of course, could come from selling the applications and other products that are developed in the hub. The problem there, however, is that the systems are not yet in place to sell mobile apps on the mass market in Zambia. Most of the BongoHive developers are not yet at the level to be producing sufficiently innovative apps that could compete with larger, corporate developers. It will take time before enough of the hub's developers are designing apps that can bring in enough revenue to sustain the initiative in the long term.

Rather than try to compete with international app developers, BongoHive's team are looking at ways to use the technology to tackle local problems, and to design products that will interest people in Zambia. For example, one developer is working on an Android app that makes it easier for people to access and search the country's new constitution.

Another team is working on a web-based school management system using the latest HTML 5 techniques, while one developer has already seen more than 6,000 downloads of his game. These are all attractive propositions for businesses who might be interested in funding these projects further, as it shows the skills of the developers and the range of products they can handle.

Recognition

There are more than five million cell phone subscribers in Zambia, but that is a relatively small number of potential mobile app customers. Even fewer have the smartphones necessary to make the best use of the technology. These devices are getting cheaper, however, and Samsung, one of the world's biggest smartphone manufacturers, has recently opened an office in Zambia to promote their products.

'The market in this country will change drastically in the next two to three years,' acknowledges Lindunda, 'but the developers here can't wait until then. They have to start now so they are ready when all those people are looking for apps for their new phones.'

A major challenge, however, is to work out how people are going to be able to buy the apps once they are available. Most of the current business models to sell apps rely on their customers having credit cards, but relatively few people in Zambia have credit cards. Consequently, the local telecoms are currently developing their own apps market places where people can buy the products using mobile banking systems.

In the meantime, the BongoHive team is promoting the development of mobile technologies, such as SMS, rather than only mobile apps for smartphones. The team hopes that the developers will work on solutions that can be used on the simpler cell phones that most people in the country have.

As BongoHive continues to grow, and facilities and equipment improve, the team hopes to offer the same opportunities to people around the country, eventually expanding to rural areas. Already, a number of local NGOs have asked the team for technical advice, and BongoHive is becoming increasingly involved in projects to promote access to information and communication technology.

'We are gaining far greater recognition,' says Lindunda, 'as organisations and businesses see the strength of using local expertise. There are definitely many opportunities opening up for us, and for the young developers in Zambia, who can inspire and support other groups around Africa.' ◀

A bridge between farmers and the web

Kenyan farmer, Zack Matere, searches the web for useful agricultural information, then posts it on notice boards around his community helping other producers to improve their crops.

ICT innovation

Zack Matere is not your average farmer. Having studied for a diploma in business administration at Eldoret Polytechnic in Kenya, he ventured into white collar jobs, which he quickly abandoned to concentrate on what many people his age regarded as a poor man's job: farming.

He started farming vegetables, and first encountered ICTs when a strange disease attacked his potatoes. Not even the agricultural officer could diagnose the cause. Zack's farm is in Segereya village, near Eldoret, a long way from Kenya's capital, Nairobi. He had learned a little about computers and the internet at college, so Zack cycled 10 km from his home to the nearest internet café. He opened the Google search engine and typed 'potato diseases.'

He found that ants had attacked his potatoes, and also found a cheap and environmentally friendly cure: spraying wood ash. Amazed by the results, Zack returned to the internet café and, after a few clicks, he was able to find a buyer for his potatoes.

Zack invested in a 3G-enabled phone that he could use to look for information online from the comfort of his home. Zack is lucky, he is internet literate, but thousands of farmers in his area do not even know how to use cell phones. Zack has therefore become the bridge between these farmers and the internet. Zack pays 50 Kenyan shillings (0.50 euro) everyday to access the internet from his phone, an amount that is beyond the reach of his fellow farmers.

Zack has tried to bring these farmers the information that they so desperately need. The initial challenge was to identify the most effective and inexpensive platform to reach and interact with a community of 10,000 people within a radius of 50 km. He came up with the idea for the network of notice boards, an initiative he calls Leo Pamoja, Swahili for 'together today'.

Specific details

Zack gets agricultural-related information, including details on how to make crops flourish, farming methods or market opportunities, and translates the message into the local language. He puts the message on paper, then hangs it up in public places, such as churches or the chief's camp, frequented by many of the farmers. For example, Zack read on the internet that a cartel of potato buyers were buying potatoes from farmers using 130 kg bags instead of the usual 110 kg sacks but were not paying the farmers the correct price.

Zack has also used the camera on his phone to take pictures of people encroaching a nearby forest, which is one of the biggest water catchment areas in Kenya. Such encroachment could affect the water supply in the area. He posted pictures of the encroachers on Facebook, which has more than 1.5 million users in Kenya. Zack also talked to officials from the NGO, Forest Action Network, and presented them with the photographic evidence, prompting the organisation to build a fence round the water catchment area.

Elated by the impact that the use of ICTs had on the farmers and in conservation of the environment, Zack has now started a pilot fish-farming project, which has received funding from the Kenyan government as part of an economic stimulus programme to dig 100 fish ponds in each constituency. In Likuyani District, where Zack comes from, however, the new fish farmers have been grappling with problems such as algae feeding on the fingerlings in the pond.

Using a computer donated by an NGO, and linked to the internet via GPRS, farmers working on the project monitor satellite images of the constituency's fishponds. The centre also doubles as a resource centre where farmers come to seek information on various aspects of fish farming.

Although agriculture makes up 30% of Kenya's GDP, and employs 80% of Kenyans, mass media still only caters to a general audience. Farming issues are only aired when they are a matter of national interest when, for example, there is a sugar shortage or a new horticultural law has been introduced. Even if more time was allocated, not all the thousands of questions the farmers have can be addressed. This is where the internet is useful, where farmers can make enquiries into specific problems.

ICTs could revolutionise agriculture in Kenya if technological literacy is encouraged. Currently, around four million Kenyans know how to use internet. This number could increase rapidly since the government recently introduced the ambitious 'digital villages' plan to bring more internet cafes to rural areas. Embracing ICTs promises good returns for farmers, especially through increased market opportunities and more efficient business operations. ◄

ZACK MATERE

Other farmers can take advantage of the vast amount of information available online when relevant messages are posted on community notice boards.

Related links

Zack Matere on twitter
➜@zackmatere

YouTube video of Zack talking about his Leo Pamoja project
➜ http://youtu.be/OE63BYWdqC4

BBC story on Zack
➜ http://goo.gl/UBC58

Bob Koigi (koigijunior@gmail.com) is a journalist from Nairobi, Kenya.

This is an edited version of the essay submitted to the 2011 NEPAD–CTA essay competition: Zack Matere, the Kenyan bridge between farmers and the internet.

KRISTIAN BUUS / ALAMY

A simple exchange system

Next2's SMS service in Kenya and Nigeria lets farmers share local knowledge, expertise and experiences with each other, and with agricultural researchers.

ICT innovation

Next2 was co-founded by internet and mobile entrepreneurs, Emeka Okoye and Brian Puckett. The idea for an easy-to-use SMS service came to Puckett one day when he was looking to buy fresh, organic, local food for his young family in Virginia, USA. There was no convenient way to find or communicate, offline or online, with local farmers to find out what products were currently available for sale.

During his research, Puckett came to three important conclusions. First, since people that live and work near each other share common experiences, backgrounds and characteristics, it makes sense to first ask those nearby when looking for particular types of information. In other words, location is an effective way to quickly filter large amounts of information, and it is this concept that is at the heart of the Next2 solution.

Second, irrespective of where we live, most people spend a considerable amount of time each day thinking about finding, buying and/or preparing food for themselves and their families. Having to make decisions about food is something we all share. It is fundamental to the human condition.

Last, the opportunity to work on a problem that affects a wide number of people, incorporating issues like food security, and increasing the income of small-scale farmers in emerging markets, drove Okoye and Puckett to design their SMS service. They specifically developed Next2 for those who do not have access to the internet or smartphones. The system works on any phone that can send and receive text messages, and gives farmers the possibility to share their concerns, experience and expertise, and to find others with similar interests.

Local search

The two developers built their solution to accomplish two goals. First, to facilitate the exchange of local agricultural knowledge and expertise between farmers based on common

Brian Puckett (help@hungrygarden.com) is co-founder of Next2 (www.next2.us).

locations and interests. Second, Next2 promotes the rapid dissemination of agricultural research and best practices to farmers by giving them direct access to information from a wide range of sources using only their cell phones and SMS messaging technology. The aim, therefore, was to provide small-scale farmers with the information they would need to improve crop yield, product marketing and income.

Setting up and operating a two-way SMS service can be a complex and costly task, but this system provides a simple and efficient method of distributing timely, customised content without the need for special equipment, or expertise, and is available at a fraction of the cost of other SMS shortcode and keyword services. Next2 designed the service to be as easy to use as possible.

For example, an organisation that wants to publish information by SMS can login on the Next2 website, set up a unique account name, and add keywords and messages that can be sent when someone sends those keywords to the system. A farmer looking for information starts a text message with the word 'get' followed by the publisher's account name and sends the message to the Next2 country phone number: 5557 in Kenya, or 08093500162 in Nigeria.

Next2 automatically sends back that publisher's keyword(s) to the farmer's mobile. The farmer can then text 'get' followed by the publisher's account name, plus the keyword to receive a message of up to 800 characters (five text messages) on that topic. The farmers only need to know a Next2 account name to discover the information that a particular organisation, or business, makes available. The farmers do not pay for the messages sent to them, only for the messages they send to the system, which cost the same as sending a regular SMS. Businesses and organisations can promote their service by listing their account name with the local Next2 phone number.

When a farmer sends a 'get' request, the system automatically creates an account name for that individual. The farmer can also register first by texting 'reg' plus an account name and location, e.g. 'reg Robert Nairobi'. The system can then use the location information to create a 'sharing circle' of other users who have logged on within a 10 kilometres radius.

Once registered with the service, the farmer can then use one of eight SMS commands to share content with other farmers and content publishers, either in English or a local language, depending on the country. In Kenya, for example, the system works in both English and Swahili.

To send a text message to the system, the farmer begins the text with one of eight commands. This tells the Next2 service how to process the text message, allowing the farmer to start, or stop the service, send a direct text to another farmer or content publisher, change location, increase or decrease the size of their sharing circle, or automatically exchange public or private messages with other farmers. They can text the word 'help' at any time to receive a message on how to use Next2.

A farmer can send a text message about a product they have for sale, or would like to buy, or a topic they would like to discuss followed by a subject word, and Next2 automatically exchanges messages between farmers in their area. For example, a farmer looking for maize seeds would text 'want maize seeds, looking for seeds to plant and harvest, good for drought'. Another farmer that has maize seeds can then reply: 'have maize seeds for neighbour that grew well last year with little input'.

Each farmer gets the other's message on their cell phone and can use the reply feature to continue the conversation. The requesting farmer receives the first from the person closest to them. If no match is found the message is included the next time the system processes messages for that location.

Next2 is careful to protect the farmer's privacy. The cell phone number is never revealed to other farmers or to content publishers. An SMS publisher only knows a farmer's Next2 account name and can use that to communicate with them.

Common goal

As with any service relying on networks, its value grows exponentially as the number of participants increase. Therefore, Next2 is reaching out to major agricultural organisations and working with a number of NGOs to promote the service to small-scale farmers. The company is discussing a pilot project with a Kenyan social enterprise initiative, Kickstart, and the Sril Group of companies in Nigeria to help farmers in those countries. Meanwhile, more than 500 people are testing the new updated system, preparing it for general release.

The system works on any phone that can send and receive text messages, and gives farmers the possibility to share their concerns and find others with similar interests

Next2 is further developing the service with several other companies. It is hosted on Amazon's Cloud infrastructure and is integrated with mobile operators' networks via an API (application program interface – a set of computer programming commands that lets two programs interact). The company works with the mobile network operators and third-party providers to offer the service in a particular country via an SMS shortcode, and is focused on providing its messaging services to countries in Africa, Latin/Central America and Asia.

The developers hope that their service will create locally concentrated farmer support networks that are in turn connected to the research and support organisations, businesses and the government agencies that farmers rely on for vital agricultural information and assistance.

The current pilot phase in Kenya and Nigeria is expanding and still seeking partnerships with NGOs, government ministries, input suppliers, micro-finance companies, extension services and educational organisations. By helping their partners to use SMS more effectively as part of their marketing strategy, Next2 is achieving its own goals: to help small-scale farmers access the information they need to increase their income and improve food security in their communities. ◀

NOOR KHAMIS / REUTERS

Farmers can use the Next2 SMS service to communicate with other producers in their area, and with regional and national agricultural information providers.

Track your cow's development

A mobile phone application tracks each cow to inform the farmer about periods in gestation, feeding, milking and disease control.

ICT innovation

A Kenyan farmer posted a message on the Farming Kenya Facebook website in April about disease-free seeds that were available from the Kenya Agri Research Institute during a period of severe damage to young maize crops in the country. Some days later, Kenyan farmers responded overwhelmingly. This was not generated by the Facebook message, however, but by an SMS sent by iCow to 9,000 farmers announcing the news and how to contact the research institute.

iCow was developed by Green Dream TECH Ltd and is the world's first cell phone cow calendar. It enables small-scale farmers, mostly dairy farmers, to access agricultural information and services over the cell phone. Small-scale farmers in Kenya who are registered with iCow receive livestock management and other agricultural information by using text messages on their mobile phones and on the web. The application, which started in 2011, informs 11,000 farmers and other members of the platform in Kenya about important days during the gestation period, and feeding and milking practices. It also helps farmers to find the nearest vets and AI (artificial insemination) providers and provides information on disease control.

The iCow application is innovative because farmers can easily register themselves and their cows via SMS services. Kenyan dairy farmers are also given tailored, time-sensitive SMS updates on how to look after their cows during gestation, calving and throughout the rest of a cow's life. All they have to do is send an SMS to 5024 – iCow's four-digit code – which works on the network of providers Safaricom, Airtel and Orange. To register, the farmer sends a code message such as reg#farmername#county#. A cow can be registered by insemination date (serve#cowname#inseminationdate#) or by birth date (birth#cowname#date of birth#). Similar code messages enable farmers to find the nearest vets and AI providers. iCow's services cost the farmer five Kenyan shillings (approximately US$0.06) per SMS.

Su Kahumbu, initiator and director of iCow, wants to bridge the information gap between younger and older farmers. But she is convinced that the way to do this is by working at the pace of the older ones to familiarize them with SMS applications. Hence, farmers may also contact iCow's customer care centre in Nairobi to speak directly to someone for advice. The older farmers appreciate this combination of SMS and direct contact, because they do not trust an absolutely virtual service.

iCow already won the Apps4Africa award in 2010 before it was even formally launched, and more recently in April 2012 it won the Kenya Vision 2030 ICT Innovation Award in the agriculture category. iCow was also featured on Forbes.com as the best new African Mobile App. It received a grant from Indigo Trust to help the expansion process to reach more farmers in Kenya and USAID support with strategic business planning and partnerships development.

The first results from monitoring conducted by the iCow team show that farmers' cows have increased their milk yields. Forty-two per cent of farmers using iCow have reported increased incomes. Half of these farmers attribute the rise to an increased milk yield ranging from 1.5 to 3 litres per cow due to better care for the cows. But iCow is not only a service geared towards providing better care and health to cows. Another of its features is a digital farmers' market. Farmers can buy and sell livestock through the iCow Soko platform by posting notices of animals they have for sale. iCow also enables farmers who only produce a small amount of milk to find each other and aggregate their product so that it can be taken to market.

Small-scale farmers in Kenya that use iCow receive livestock management and other agricultural information by using text messages

Farmers are not the only members of iCow. Green Dream TECH's mobile service is also useful for many organizations, government ministries and other stakeholders in the agricultural sector. iCow draws pertinent data from the field, data that the wider agricultural sector can use to create efficiencies across the agricultural value chain. In a way, iCow is using the platform to crowdsource and collect data that is important to improve value chain development.

The platform allows farmers to alert the system immediately when there are disease outbreaks, allowing everyone to react to it quickly. The local authorities can then broadcast this news to all farmers on the platform in the affected region, telling them where and when to find vaccination services. Other stakeholders are using it to advertise agricultural field days or exhibitions in certain locations, or to offer financial services. ◀

iCow is the world's first cell phone cow calendar. It enables small-scale farmers, mostly dairy farmers, to access agricultural information and services over the cell phone by using text messages on their cell phones.

Su Kahumbu (kahumbu.su@gmail.com) is an organic farmer and the founder of iCow. She is the Creative Director of Green Dream TECH Ltd and is a TED Fellow.

Kick-start your innovation

Entrepreneurs and innovators in Africa can now pitch their ideas on a web platform to find investors. Venture Capital for Africa (VC4A) aims to help small-scale start-up businesses – not by raising capital, but by creating a community platform that allows entrepreneurs to describe what they are doing or want to do, and shows investors what kind of interesting ideas there are in the African market.

ICT innovation

Launch your favourite browser and visit VC4Africa (http://vc4africa.biz/). The website's homepage invites you to open a free account. Remember that the online profile you create is the business card peers and investors alike will look for and read in order to learn more about you and your business ideas. The first registration step, though, does not require you to submit immediately a complete, detailed profile: simply choose a username, fill in your name and email address, and write a brief description of yourself.

If you feel like learning more about VC4Africa before you register, visit the blogs page at vc4africa.biz/blogs. Maintained by VC4A's founders, it is updated regularly with very informative posts. The blog provides insight into VC4A's day-to-day activities. It contains summaries of the platform's services, interviews with some of the entrepreneurs in the community, meeting wrap-ups and more.

One excellent feature of VC4africa is its 'meetups'. Meetups are official – though casual – get-togethers organized by VC4Africa across Africa and abroad, where entrepreneurs and investors meet, talk and share experiences. Without having to log into the member area of the website, you can read more about the recent meetups here: http://vc4africa.biz/meetups/. You will get a better idea of how meetups are conducted, who has attended previous meetups and even read quotes from participants. If you join VC4Africa, you can even organize your own meetup.

The Q&A page is where you ask questions and get answers from community members. Questions are tagged and can be searched easily by category or using the search box. Everybody is encouraged to give tips, help out new peers or just ask questions. With a community of 4,400 members from 25 different countries, you are sure to get the answer you are looking for. You can post questions anonymously but then you cannot use or benefit from any of the interactive tools the site offers, like voting, earning reputation points and subscribing to questions.

Related links

➜ **http://vc4africa.biz/**

➜ **www.balancingact-africa.com/news/en/issue-no-594/top-story/africa-s-ict-entrepr/en**

PURESTOCK / ALAMY

VC4Africa is a professional online platform meant to promote business and facilitate interaction between entrepreneurs and investors.

VC4Africa is the fastest-growing online community of investors and entrepreneurs dedicated to building business in Africa

Being a VC4Africa member has many benefits. Not only can you browse through the profiles of fellow entrepreneurs, you can also see who the investors are, and what deals have been made recently. One great feature, adding a touch of fun while encouraging excellence, is the award system. With many virtual awards to be earned, members can gain a reputation in the community when they actively participate by helping their peers, sharing insights, giving advice or contributing in other ways.

To realize their business ideas, entrepreneurs need to raise start-up capital first. Microfinancing does not always provide sufficient funding, and the big deals are just too few and far between. Start-ups are always on the lookout for potential funding opportunities, contacting and building networks of peers and curious investors to promote their business ideas. First-time entrepreneurs, lacking the necessary connections needed to find the right investor, can use VC4Africa virtual venture space to present their ideas and receive feedback from fellow members.

All members can browse through the extensive list of individual ventures, each presented in a fact sheet, which you can use to share your own venture idea with others by entering a 'pitch' and complementing it with categories, tags and symbols that will help investors understand and find your venture. You do not have to show all the information about your venture or innovation to members: you can decide what information to make public.

VC4Africa's user base is dynamic and quick to help or give feedback. You can connect to the website with your Facebook, Twitter or Google accounts and befriend fellow VC4A members.

VC4Africa is meant to promote business and facilitate interaction between entrepreneurs and investors. The platform is a professional space where deals can be made but where risk exists as well. It is therefore important to read and understand the terms of service and disclaimer.

VC4Africa is the fastest-growing online community of investors, 'angels' and entrepreneurs dedicated to building business in Africa. Investors can find interesting companies, see which businesses are raising capital, follow their progress and gain exclusive access to documents. They can network with fellow investors and see who is investing. Entrepreneurs use the platform to connect their young companies with other start-ups and access secure deal rooms and tools for networking with investors. ◀

Resources

ICT innovation

Documents

World Bank Publications: Agricultural Innovation Systems
Agricultural Innovation Systems: An Investment Sourcebook explains how to identify the approaches most likely to strengthen agricultural innovation systems (AIS) and promotes innovation and equitable growth. The Sourcebook provides a menu of tools and operational guidance, as well as good practice lessons.
➜ **http://goo.gl/Et6Ri**

World Economic Forum Technology Pioneers 2012
From making the internet more secure for businesses to providing health diagnostics to rural populations with limited internet access, the Technology Pioneers selection committee – comprised of entrepreneurs, investors, academics and technology experts – has chosen a leading group of young companies. Noteworthy among this year's selection is the number of companies with products that cater to poorer, underserved populations, as well as companies which offer innovative financing models for businesses and individuals.
➜ **http://goo.gl/gwp2U**

Agriculture needs better innovation, not technology


LUC GNAGO / REUTERS

The importance of farmers' capacity to access and use information for innovation has been overshadowed by the conventional view that most change is driven by new technology and technical improvements. Similarly, insufficient attention may have been given to the fact that the capacity for innovation in agriculture is influenced not only by farmers' skills and resources, but also by the wider network of links and relationships that farmers have, which help ideas to diffuse and find new uses. These hypotheses are being tested by a research project in India and Nigeria on the long-standing problem of fodder scarcity 'innovation systems' perspective.
➜ **http://goo.gl/Ubd6M**

Web resources

Mobile Applications Laboratories Business Plan
The business plan informs mobile application labs in Africa, Asia and around the world to develop sustainable business models and transition from a donor-funded start-up phase to a self-financing, sustainable phase over a three-year period. The plan's six chapters cover topics such as landscape analysis; looking at the success factors and challenges facing the labs; and business model and pricing strategies that define potential revenue streams for the services that the labs offer.
➜ **http://goo.gl/OQc3K**

AfriLabs


BONGOHIVE.COM

AfriLabs is a network organisation that promotes the growth and development of the African technology sector. By working together, the labs improve their chances of success, generating more success stories and decent work for young Africans, both as a means of self-employment and as job creation for others. Members have worked to establish the Hive Colab as Kampala's leading open collaboration space and successfully tendered to host the infoDev-sponsored mobile apps lab in East Africa.
➜ **http://afrilabs.com/**

Coders4Africa
Coders4Africa provides African programmers and developers a gateway to free high-quality training and certification in the main technologies and platforms that currently dominate the software development industry. The main objective is to provide free training for 1,000 African software developers and programmers by the year 2016. Coders4Africa provides training, education and development infrastructure, logistics and intellectual support to IT professionals in Africa. The programme hopes to create a community of African programmers that share and transfer knowledge among themselves and to future generation of programmers.
➜ **www.coders4africa.org**

Projects

Promoting Farmer Experimentation and Innovation in the Sahel


EU HUMANITARIAN AID AND CIVIL PROTECTION

The action-research programme PROFEIS in Burkina Faso, Mali, Niger and Senegal explores how the embedding of research and extension within farming communities can enable a constructive exchange of experience and knowledge between farmers, extension workers and researchers. Relevant local innovations are identified, supported and jointly improved to contribute to increased food production. PROFEIS is coordinated by the NGO IED Afrique (Innovations, Environnement & Développement en Afrique), based in Senegal.
➜ **http://goo.gl/jiaf7**

The Butterfly Project
This project trains rural children to be the future visionaries of their own villages and funds a comprehensive education at a special school by using their own land to grow high-value crops. Currently, Social Enterprise Africa CIC (SEA) is working in conjunction with two other organisations to implement this plan in Uganda. As the programme looked for sustainable funding solutions, it began a trial farming project in 2010, using land owned by the families of the students recruited from northern Uganda. They will now develop 60 sites with 500,000 seeds.
➜ **www.thebutterflyproject.com**

The SEED Initiative
The SEED Initiative is a global partnership for action on sustainable development and the green economy. Founded by UNEP, UNDP and IUCN at the 2002 World Summit on Sustainable Development in Johannesburg, SEED supports innovative small-scale and locally driven entrepreneurs around the globe that integrate social and environmental benefits into their business model. The goal of SEED is to support the ability of such entrepreneurs to scale up or replicate their activities.
➜ **www.seedinit.org**


TORBJÖRN FREDRIKSSON/UNCTAD

Torbjörn Fredriksson is responsible for UNCTAD's work on ICT for development. As such, he is the lead author of the annual Information Economy Report, which monitors global ICT trends from a development perspective.

Demanding for innovation

ICT innovation

How do you see Africa's role in the global development of technology in the next 10 years?

➜ In some parts of Africa, we are already witnessing dynamic trends in ICT-enabled innovations. This is helped a lot by the spread of mobile phone use as well as improved international broadband connectivity. Take the case of mobile money. According to the GSM Association, almost half of all known mobile money deployments are in Africa, and a quarter of those African deployments are found in the East African Community. This is no coincidence as the most successful of these schemes is M–Pesa in Kenya, which has served as an inspiration. I think such examples play a very important role in encouraging further innovation and helping both firms and individuals to search for new ideas and opportunities. Africa is transforming, and I think soon we will see greater interest among the youth to become entrepreneurs and innovators.

Has social media played a role in spreading the word about opportunities?

➜ Technological changes are enabling the development of new software and applications, and also helping to create a demand for such products. As we will highlight in our next Information Economy Report, due to be launched in November 2012, increased reliance on peer-to-peer development models and Free and Open Source Software, as well as opportunities for crowdsourcing and freelancing, all work to increase the participation of developing countries in the global system of software production and development. Various social media support this trend, for example, by offering a platform for collaboration, problem-solving and marketing.

Is there more to the expansion of tech innovation than just increased access to technology?

➜ Successful innovation always depends on market access. We would not have seen such a dramatic increase in mobile applications had there not been a demand for these innovations. For example, not all developers in some developing countries have equal access to electronic payment services, making it more difficult for them to sell (and be paid for) their services. Moreover, with the expansion of mobile phone use in low-income countries, there is suddenly a new market for domestically oriented mobile apps – serving local needs, interests and languages. At the same time, universities and other training institutions can play a key role, by generating the skills needed to seize new opportunities, for example.

What are the possibilities and opportunities for the island states of the Caribbean and Pacific to develop ICT technology?

➜ For small economies there are obvious limitations – due to a shortage of skills and domestic market constraints – to how much can be done locally in terms of ICT production. At the same time, every economy stands to benefit from having at least basic domestic software development capabilities. Without these skills, it becomes more difficult – or at least more costly – to adopt, adapt to and develop the software applications needed to fully benefit from an emerging information society. Even a small island state can potentially leverage ICTs for economic diversification, for example by expanding into ICT-enabled services (such as call centres and back-office functions) and software development – on condition that it can offer adequate skills and affordable and reliable connectivity

What kind of support do aspiring innovators need to ensure they reach their full potential in the coming years?

➜ Most learning, mastery and adaptive activity requires close and continuous interaction with other enterprises, such as suppliers, subcontractors, competitors and consultants, as well as with other actors, such as public R&D institutes, universities, the MSTQ (metrology, standards, testing and quality) system, small and medium enterprise extension services, venture capital funds and export marketing or training institutions. A good supportive institutional infrastructure is therefore important for effective innovation. Incentive structures that foster entrepreneurship, risk-taking and innovation at the company, industry and university level are also important. Innovators in developing countries will also benefit from having access to affordable ICT infrastructure.

The focus at the moment is very much on producing software. What kinds of hardware developments are also going on in developing countries?

➜ Only very few developing countries have successfully managed to become major players in the hardware production system. East and Southeast Asia – led by China – accounts for some two thirds of all ICT goods exports. Another 30% is taken care of by developed countries, leaving only 4% to the rest of the world – including such giants as Brazil and Mexico. There are huge economies of scale involved in ICT goods manufacturing and strict demands on power and transportation infrastructure as well as logistical systems. Such requirements place limitations on the number of countries that are in a position to succeed. The software field is very different. Even individual software developers can contribute to the development of new applications and successfully export their services through on-line platforms, such as Elance and oDesk. Moreover, there is a growing need for software applications tailored to domestic needs in developing countries. This trend can be further spurred through public procurement organized in such a way to bring domestic software enterprises into the picture while at the same time improving government services. ◀

THOMAS COCKREM / ALAMY

With the expansion of cell phone use in low-income countries, there is suddenly a new market for domestically oriented mobile apps – serving local needs, interests and languages.


TIM SIKKEMA / FOLLOWING THE WAY BLOG

A message with a beat

Farmers in the Madang Province of Papua New Guinea are using video to record agricultural messages played on the wooden garamut drum. The farmers are working with a team from the Papua New Guinea University of Technology (PNGUT), and hope that the videos will provide valuable agricultural information as well as preserve traditional methods of communication. In an interview with Radio Australia, Dr Lilly Sar, a lecturer at PNGUT, said that the use of video will encourage younger people in the communities to become interested in, and learn more about, their traditional culture. 'The elders wanted the young people to value the social bonding that is common in PNG,' said Sar, 'but because young people are generally moving away from the villages they lose that bonding, or it weakens. Now, the elders teach the skills of the garamut while the young people are engaged in making the videos, and we hope that this will reduce that gap.' The project also actively involves women, and encourages them to talk on camera about food crops, bush foods and meat preservation techniques, and to also take a greater role in decision making in the community. By using the garamut to promote agricultural messages, the community expects that small-scale farmers in the area will become more self-sufficient, and improve food security in the area. Once the various traditional farming practices have been recorded, they can be added to the resources and extension material from the country's agricultural research organisations.

➜ Listen to the interview on Radio Australia: http://goo.gl/KRLuY

Text-based Facebook access

Access to Facebook should be easier in Africa following mobile provider Orange's new initiative. Orange is the first on the African continent to use USSD (Unstructured Supplementary Service Data) technology. USSD messages create, unlike SMS messages, a real-time connection during a USSD session. The connection remains open, allowing a two-way exchange of a sequence of data.

Orange launched the service late last year, through Egyptian mobile operator Mobinil. In just one month, over 350,000 customers picked up on the service. Orange is targeting Côte d'Ivoire next with its Facebook-via-USSD service, with more countries to come throughout the year.

USSD sends information over 2G networks. The service is text-based, so users who do not have a data plan can still access Facebook. Users can access all of Facebook's major features – search for and invite friends, accept and deny friend requests, update their status and interact with their friends' posts with comments and likes. Users can pay either by timed sessions of 10 to 20 minutes, or they can pay per day, week or month.

➜ Read the original article: http://goo.gl/rqaPh


THOMAS MUKOYA / REUTERS

ICTs' effect on sustainability

While ICTs have certainly provided many benefits to society in the last 20 years, technological developments have also brought a number of challenges to sustainability, according to a recent discussion published by the International Institute for Sustainable Development (IISD). Entitled 'ICTs, the Internet and Sustainability', the paper looks at the implications of a rapidly developing information society and considers specific areas where problems may arise.

The author, David Souter, notes that ICT-enabled innovation has affected the economies and societies of many developed and developing countries since the Rio Summit in 1992. Citizens with increased access to information have been able to communicate their thoughts and concerns with a wider group of people than previously, and enabled them to challenge traditional economic and social structures. Meanwhile, the expansion of technology has also given rise to new opportunities for crime, terror and defamation, and led to further disparities between rich and poor, young and old. The ICT sector is also the source of considerable environmental harm because it increases the demand for energy and produces electronic waste.

The paper goes on to raise three significant questions and asks if, since this technology was not so widely available at the last Rio summit and considering all the social, political and environmental effects, we need to redefine the meaning of sustainability.

➜ Read the full paper: http://goo.gl/CBHCX

4G arrives in Africa

PHIL WOODBRIDGE/RAWMUSIC

Angola is the first country in Africa, and one of the first worldwide, to be connected with high-speed 4G services via the cell phone network. Phone operator Movicel, one of Africa's biggest cell phone network providers, announced a US$100 million project to upgrade the network in early 2012.

Movicel is cooperating with the Chinese phone company, ZTE, on this project, and will import all the equipment from China. 4G already is available in the oil-producing region of Cabinda, and gradually will be available in the 15 most densely populated cities later this year. By the end of 2012, another 30 cities in more remote areas will be able to make use of 4G services.

Movicel chief executive officer (CEO) Yon Junior said in an interview with the BBC that the investment is not 'just a question of technology. It has to be affordable according to the country's needs and capacity to pay.' He also insists that the company's investment empowers local people. Movicel is also expected to place an order for 4G tablet computers.

➜ Read the announcement on Movicel's website: http://goo.gl/05LxU
➜ Read the BBC article: http://goo.gl/XTQMe

Mobile coverage in Congo rainforest

IP ACCESS

Okay, maybe it is not 4G (see above), but remote rural communities, even in the rainforest, will soon be connected to mobile services in the Republic of Congo. RascomStar-QAF, the pan-African satellite operator, plans to deliver mobile coverage and fixed telephony access for IPX Extenso in remote areas in collaboration with ViaSat and ip.access. To deliver the service, UK-based ip.access uses picocells, small cells that create private wireless networks in a particular area. These cells will be deployed in around 50 sites throughout the country with one gateway in the capital, Brazzaville. Installation and the first pilot service will begin this summer with plans to widen the deployment in 2013 and include at least ten more countries in the central African region.

The picocell solution would be much simpler and cheaper than having to build new towers and expensive base stations.

➜ Read the statement published by ip.access: http://goo.gl/dnMKR

Mobile app for crop insurance wins award

46,000 Kenyan smallholder farmers can now cover themselves for crop losses due to weather conditions with a cell phone app named Kilimo Salama. This is a micro-insurance product that uses technology to monitor weather patterns and compensate farmers in the event of losses. It relies on low-cost cell phone payments and data systems.

The mobile crop insurance coverage won the 2012 Financial Times and IFC Award for Technology in Sustainable Finance. According to the judging panel, the product is not only helping individual farmers, but has helped change the negative perception of insurance among Kenyans by using a host of low-cost technologies to win farmers' trust.

Kilimo Salama, meaning 'safe agriculture' in Swahili, provides coverage in the event of drought or excessive rainfall for farmer's seeds, fertiliser and other inputs for crops such as maize, wheat, beans and sorghum, via the mobile money transfer service, M–Pesa.

Farmers pay a 5% premium on top of the price of seeds, fertiliser and other farm inputs to purchase the Kilimo Salama insurance coverage from agro-dealers. They use the camera in cell phones to scan a special bar code on the product at the time of purchase. This registers the insurance policy with UAP Insurance through Safaricom's mobile data network. The farmer is then sent a text message confirming they have purchased the insurance policy.

In an article in *The Wall Street Journal*, Mike Mack, chief executive of Syngenta AG, wrote that growth is enormous and that 'there is no reason why this program cannot be adapted throughout much of Africa'.

Source: ITWebAfrica.com – original article: http://goo.gl/kyK8f
Read Mike Mack's article: http://goo.gl/Sw94k
Official website: http://kilimosalama.wordpress.com/

RADU SIGHETI / REUTERS

73 % drop of narrowband adoption rates on the whole African continent over the last four years.
http://goo.gl/uGdSl

1.2 billion active mobile-broadband subscriptions in the world. That is 17% of the global population.
http://goo.gl/r6VJh

19.2 % of page views on cell phones in January 2012 in Africa is the highest rate in the world.
http://goo.gl/aJ8k4

Technologies for scientific dissemination


CHRISTOPHE YORSAON HIEN

Christophe Yorsaon Hien (hien_christophe@yahoo.fr) is professor and consultant specialized in eLearning based in Burkina Faso.

Websites

Google, Yahoo, LinkedIn, Viadeo and Facebook are the websites I visit most frequently. I use those websites several times a day, mostly for messaging purposes. I also use Yahoo and Google for my research and for learning about new applications and software development.

For me, Google is sufficient, with its array of options such as YouTube, Scholar, Books and the alerts, which send me daily updates in my main areas of interest. These sites helped me to learn how to make efficient use of software and applications, and made it possible for me to complete two master's degrees in education science.

Of course, I also seek information on current events, scientific articles and other works in my field of research: ICT and education. Persée, for example, is a very interesting scientific research program. I use it to find digital publications of scientific journals in the field of the humanities. The entire printed collection of journals is digitized and published online through a portal that offers access to the collections as well as advanced functions that facilitate and enhance the use of the portal's resources.

I access those sites through bookmarks in my browser ('Favourites') and through Google Apps such as iGoogle. I hardly use RRS feeds: alerts are sufficient for me.

➜ **https://news.google.com/nwshp?hl=fr&tab=mn**
➜ **www.persee.fr/web/guest/home**
➜ **www.youtube.com/**

Freeware is recommended for processing videos and creating training tutorials, and converting multifunctional media and recording audio and screen activity.


MATTHEW OLDFIELD EDITORIAL PHOTOGRAPHY / ALAMY

Web tools

I use Google's and Yahoo's instant messaging services and Skype for personal and professional conversations every day. For some work-related exchanges with Euforic Services, I use AT&T. I use the text, sound and video features of these web tools, with friends or business partners located in the same town as well as for long-distance communications.

In particular, I share my resources with friends and colleagues with the use of listservs and discussion forums, and also through my Delicious account. In general, I prefer Google's set of web tools. I use Google's Picasa web albums, but for editing my photos I prefer Microsoft Picture Manager. When working on certain projects, I use Google Docs.

➜ **https://docs.google.com/#home**
➜ **http://picasa.google.com/#utm_medium=embed&utm_source=pwalogin**
➜ **http://delicious.com/**
➜ **www.euforicservices.com/**

Social networking

I am a member of a number of social networks, such as Facebook, Viadeo and LinkedIn. I use Facebook for news and to contact my friends, and Viadeo and LinkedIn for professional purposes (for example, job opportunities). They are all useful in their own way.

I also use some specialist networks and platforms, like FormaVia, a digital network for professionals working in eLearning established in France's Rhône-Alpes region.

➜ **www.formavia.fr/**
➜ **www.viadeo.com/en/connexion/**
➜ **www.facebook.com**
➜ **www.linkedin.com**

Software

I recommend freeware such as Format Factory and CamStudio, which are ideal for processing videos and creating training tutorials. Format Factory is a multifunctional media converter, and CamStudio allows me to record all screen and audio activity on my computer and save them as AVI video files.

Other software I use for video material is TurboDemo. This software enables me to capture single screenshots that can be edited as slides.

➜ **www.turbodemo.com/eng/index.php**
➜ **www.formatoz.com/**
➜ **http://camstudio.org/**

Mobile

I would have a hard time coping without both my phone and my laptop. When I am in the field in a rural area, my main connections to my family and colleagues are my phone and my laptop, on which I store all my documents. Copies of my professional documents are stored in my e-mail on Google Docs, and I've recently started using Dropbox's cloud-based storage. To me, e-mail remains the safest means of storage.

I use my mobile phone only for calls, messaging and sharing audio and photo files. My cell phone is too basic to run any apps. I cannot use a GPS for example, but my phone can take pictures, record videos and sounds.

I plan on getting a tablet: they're lightweight, compact, easy to carry and sometimes even have more advanced capabilities than laptop computers. Tablets can replace both computers and phones.

➜ **www.dropbox.com/** ◀

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